

## ENGINEERING

# Flying Glass Hazard

**Dangerous shattering of windows by bomb explosions is possible even though the panes have been treated with anti-scattering materials.**

► **FLYING GLASS** from windows blasted by bomb explosions is still a hazard even when the glass has been given an anti-scattering treatment, declared Frank W. Reinhart of the National Bureau of Standards, speaking at the meeting of the American Society of Mechanical Engineers in New York City.

In the Bureau of Standards investigation a vacuum-concussion chamber was used to test the various anti-scattering treatments. The glass specimen was clamped as a cover over a tank connected to a vacuum reservoir. The opening of a quick release valve reduced the pressure inside the tank suddenly, causing the breaking of the glass by the air pressure on the outside.

Lacquers, tapes and adhesive-fabric materials were used in the tests. They were subjected to accelerated aging to determine how well they retained their anti-scattering properties in service. All three materials were found to have some satisfactory breaking characteristics.

"An adequate film thickness, at least 0.02 inch, must be applied in the case of lacquer and the tape must completely cover the pane in overlapping strips," Mr. Reinhart said. "Individuals should take shelter away from glass-enclosed spaces even though the glass is covered with an anti-scattering material."

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## Turbosupercharger

► "THE LAYMAN looks with amazement when he first sees the turbosupercharger with its turbine glowing brilliantly at 1,700 degrees Fahrenheit, while only inches away its compressor is inhaling the frigid, rarefied air of the stratosphere at 100 degrees below zero," E. E. Stoeckly of the General Electric Company, West Lynn, Mass., said.

These turbosuperchargers have put America's biggest bombers and deadliest fighters on top of the enemy.

"In the thin air at today's fighting altitudes of 25,000 to 35,000 feet, the un-supercharged aircraft engine, developing less than 25% of its sea-level power, is ineffective. This loss in power is restored by supercharging—forcing a normal

weight flow of air into the engine," he explained. "Centrifugal-type air compressors are used to supercharge aircraft engines. When the power to drive the compressor is taken from the engine crank shaft, it is termed 'gear supercharging.' When the compressor is driven by an exhaust-gas turbine, it is called 'turbosupercharging.' In the high altitude bombers and top-flight fighters, the two are combined."

"These compactly built fire-eating turbosuperchargers multiply engine power several times at high altitudes. They operate at terrific speeds with all parts stressed to their ultimate limit. Thus, they must not only be carefully designed and built but must be tested with extreme care under all the conditions which are encountered in actual flight."

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## Yankee Ingenuity Needed

► **ENGINEERING** schools should offer to selected students special opportunities to develop their Yankee ingenuity, Wilbur L. Merrill, director of the General Electric works laboratory, Schenectady, N. Y., told the American Society of Mechanical Engineers.

Y. I. is as important as I. Q. While technical colleges are providing excellent engineering training, they are developing ingenuity only subconsciously, Mr. Merrill said.

"Engineering development and design along established lines will yield a sound product," he said, "but for the new short cuts to save labor and material, for the new stunt which makes the product radically better, for the new scheme which makes possible the heretofore impossible, we must look to Yankee ingenuity."

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## Human Relations Research

► **THE STUDY** of people by industrial production research departments is as essential as the study of equipment, processes, methods and materials.

This idea was advanced at the meeting by L. C. Morrow, editor of *Factory*

*Management and Maintenance*, in a panel discussion.

"What makes people work well?" he asked. "Is it good health, food, nutrition, music, quiet, good industrial relations, education?"

Such studies of human relations in industry should be classified as production research Mr. Morrow believes.

"We should achieve as nearly as we can the lowest possible costs of production in order to allow sales prices low enough to bring about a distribution of industry's goods and services wider than we have ever experienced," Mr. Morrow said. "That is the only way we shall be able to achieve a high standard of living for everybody. It is the means by which our industries can be given a production demand that will mean a plentitude of jobs."

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## MEDICINE

## Navy Uses Movie Film To Detect TB in Recruits

► **THE 35 MILLIMETER** motion picture film, similar to that which brings you your favorite screen star, has become a major weapon in the U. S. Navy's continuing war against tuberculosis.

The film is part of the photofluorography system for taking X-ray pictures of the chests of all recruits, in order to detect and weed out those with tuberculosis. The films can be made at the average rate of 200 per hour, cost only one cent per person and doctors are able to review the negatives at the rate of 400 per hour. Saving in space of storage for the films is another advantage.

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**VOLCANO OBSERVATORY —**  
New hut used by Dr. Ordóñez in observing Parícutin and Zapicho.